

SMART SEWER MONITORING FOR EFFICIENT PROCESSES UNDERGROUND

JANSSEN RIOTECH OPTIMISES THE DEPLOYMENT OF MOBILE SEWER PLUGS WITH AN IIOT SOLUTION FROM WIKA



The PMD system from Janssen Riotech consists of two cases – a sensor case and a communication case. It combines sensing, wireless transmission and a gateway in robust transport cases for flexible deployment in the sewer network.

Image source: Janssen Riotech

How can sewer plugs be monitored efficiently without constant on-site inspections? The answer: the PMD system from Janssen Riotech. It consists of two cases: A sensor case measures filling pressure, back pressure and temperature of the sewer plugs and sends the data wirelessly to the communication case, which transmits them to a cloud platform. Via LoRaWAN®, the status data of the inflatable plugs are regularly transmitted to a cloud platform and can be conveniently monitored remotely. At the same time, seamless digital documentation of the pressure test is created, while pressure drops are detected and reported immediately. Robust WIKA pressure sensors (PEW-1000, PEU-20/21) ensure precise capture of internal pressure, while automatic logs and detailed dashboards create transparency and safety – from the shaft to the office.



Smart in sensing

Challenge

Growing requirements

Janssen Riotech has been supplying solutions for sewer plugging and testing technology to specialist companies, network operators and municipalities across Europe for more than ten years. In practice, there have been increasingly higher demands on documentation, safety and efficiency. At the same time, work in the sewer network remained largely analogue until now – time-consuming, labour-intensive and hard to trace.

Lack of transparency

Pressure tests, sewer plugs and leak tests were previously mostly monitored manually. Whether the test pressure remained stable or leaks occurred was often only detectable after completion of the work. At the same time, skills shortages and new requirements for traceability make day-to-day practice more difficult. Janssen Riotech saw an opportunity in this: to create more transparency and control through digitalisation and smart sensing – directly from the sewer.

Background: pressure testing in the sewer network

- Pressure tests ensure that pipes and connections are leak-tight and functional – a basic prerequisite for safe network operation.
- For this, inflatable plugs are inserted into the pipe and filled with air to generate a defined test pressure.
- Sensors monitor this pressure continuously; pressure drops indicate leaks or material weaknesses.
- Digital logs document the entire process automatically and make it easier to provide evidence to network operators and authorities.
- The technology is used both in municipal sewer networks and in industrial pipeline systems, for example during maintenance work in the chemical industry.



Image source: Janssen Riotech



With the PMD system we have taken a decisive step towards digitalisation. Previously our test procedures were manual – today they are more precise, faster and more sustainable. The solution gives our customers full control and saves valuable time in operation.

John Custers,
General Manager at Janssen Riotech

Solution

From measured value to platform solution

Together with WIKA, Janssen Riotech developed a system that combines traditional measurement technology with modern IIoT communication. The PEW and PEU pressure sensors used measure the internal pressure in the inflatable plugs precisely; a gateway transmits the data via LoRaWAN® to the network server provided by WIKA. In the WIKA platform the values are displayed, documented automatically and archived in an audit-proof manner – for full control over test processes, even remotely. The solution is used in shaft structures, particularly, during maintenance and testing work in water and wastewater pipelines. But it is also used in industrial pipelines, for example in the chemical industry, when pipes need to be safely sealed off and monitored during maintenance work.

Partnership on equal footing

WIKA contributed its know-how and measuring instruments in industrial sensing and data integration; Janssen Riotech provided the idea and field experience. In several test phases, sensors, software and housings were optimised for deployment in the field. The result: a robust, user-friendly system that combines efficiency and safety and paves the way for digital sewer monitoring.

Janssen Riotech

- Headquarters: Eijsden, Netherlands
- Focus: solutions for sewer plugging and testing technology
- Customers: specialist companies, network operators and municipalities in Europe



In their robust case, the PEW and PEU pressure sensors from WIKA can be easily transported.



Image source: WIKA



The combination of precise sensing and practical application shows what is possible when technology and experience come together. We supported Janssen Riotech in the development of the PMD system, both in hardware and in the cloud software. This solution makes sewer operation more transparent, safer and more efficient.

Philipp Lausberger,
IIoT Application Specialist at WIKA

Solution in detail

Compact design

The entire system is housed in a robust transport case. All components – sensors, connections and gateway – are preconfigured and ready for immediate use. The Pipe Plug Manager can be integrated into existing test processes without training or special installation. Due to its compact design, the system is particularly mobile and ideal for changing places of use in network operation.

Precise measurement

The PEW-1000 and the Ex-approved PEU-20/21 capture the internal pressure with high precision and respond to minute changes. They are also vibration-resistant, mobile and designed for a range of demanding conditions. Even with humidity, dirt or temperature fluctuations, they deliver reliable measuring results – a decisive factor for the safety and quality of leak tests. If the pressure drops continuously during the test, the system detects possible causes at an early stage, such as small leaks or damage to the inflatable plug. This enables a quick response before the plug loses its function.

Data transmission

The measured values are reliably transmitted to the cloud via LoRaWAN® – even from hard-to-reach, decentralised locations without mobile reception. The technology enables ranges of several kilometres, with low energy consumption. This keeps tests transparent and seamlessly documented; via the WIKA platform, operators have access at any time to current values and historical records.

User-friendly platform

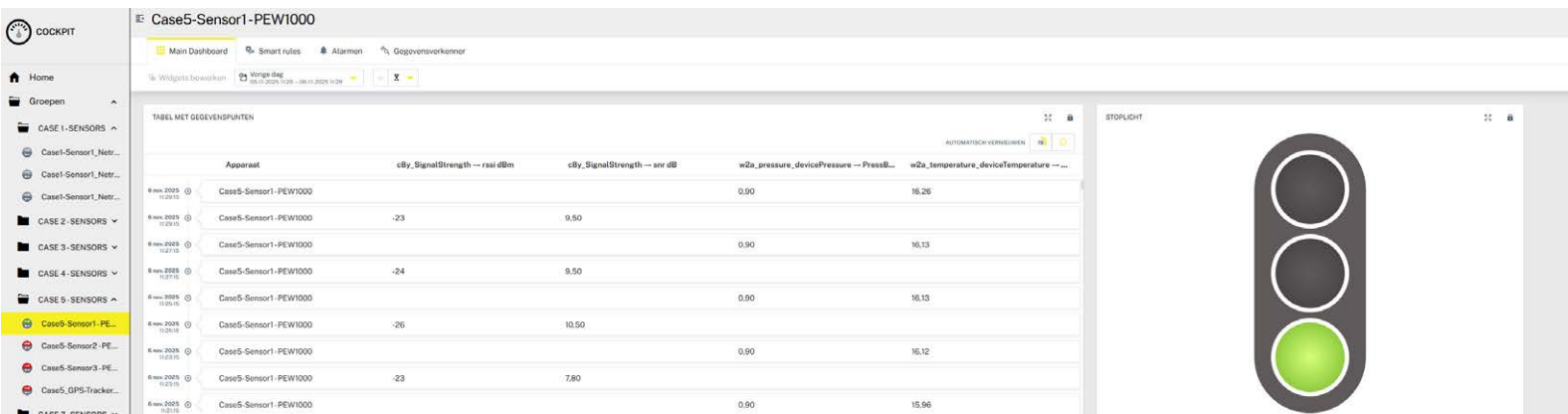
The WIKA platform consolidates all relevant data – pressure profiles, temperature, battery status and signal quality – in a clearly structured dashboard. Coloured status indicators and automatic alarm messages make it easier to monitor multiple test sites simultaneously. Test logs are generated automatically, stored securely and can be forwarded directly to clients or authorities.

Sustainability and efficiency

Digital monitoring can significantly reduce on-site inspections. This saves time, reduces fuel consumption and lowers CO₂ emissions. At the same time, the documentation time per job is significantly shortened since all measured values are recorded and stored automatically. The combination of precise sensing and intelligent data processing provides efficiency and rapid amortisation.

PMD system – Technical highlights

- Robust PEW/PEU pressure sensors with LoRaWAN® communication
- Complete system in a mobile case with gateway
- Platform-based display and documentation
- Automatic log generation
- Low-maintenance, durable design



Wika's integrated dashboard displays the status of the deployed plug with a traffic-light indicator.

Image source: Janssen Riotech

Advantages at a glance

- **Full process transparency:** Measured values at regular intervals and automatic logs provide insight, at any time, into the condition of the sewer network.
- **Fewer on-site inspections:** Pressure and status can be monitored remotely – this saves time and travel.
- **More safety:** Early warning system for pressure deviations through automatic alarm messages.
- **Higher efficiency:** Automatic data acquisition reduces manual effort and shortens documentation times.
- **Seamless documentation:** Automatically recorded measured values ensure transparent and audit-proof test logs.
- **Sustainability:** Lower fuel consumption and reduced CO₂ emissions thanks to fewer trips.



Expert team from Janssen Riotech
Image source: Janssen Riotech

Digitalisation builds trust

The combination of WIKA's sensing and Janssen Riotech's solution portfolio takes pressure testing in the sewer network to a new level. Processes that were previously manual and time-consuming now run efficiently, traceably and safely. The PMD system shows how digital measurement technology simplifies workflows, conserves resources and creates the foundation for a networked infrastructure.



Our customers want to know what happens in the sewer without constantly being on site. With the PMD system this is now possible. The solution saves time, prevents errors and creates trust – exactly what really counts in practice.

John Custers

General Manager at Janssen Riotech

Contact

Would you like to learn more about WIKA's PEW and PEU pressure sensors? Contact us and we will be happy to advise you.

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www.wika.com

